US EPA/ORD Teleconference with USDA

PFAS Toxicokinetics and Effects in Agricultural-Related Species

August 7, 2019, 1:00 to 2:00 PM EDT

Present:

US EPA/ORD: Chris Lau, Marsha Morgan, Marc Mills, Barbara Wetmore, Paul Schlosser, Dustin Kapraun, John Nichols, Carlie LaLone, Andrew Kraft, Dale Hoff, Amanda Bernstein, Amanda Fitzmorris, Louis D'Amico; Ron Hines (US EPA/ORD Lead)

USDA: David J. Smith (USDA-ARS Lead), Sara Lupton (USDA-ARS), Emilio Esteban (USDA-FSIS)

Absent:

US EPA/ORD: Hisham El-Mazri

USDA: Linda Abbott

Several minutes were taken introducing all in attendance, describing possible expertise that relate to collaborative efforts on PFAS toxicokinetics and effects in agricultural-related species

Sara Lupton described some of the past studies on toxicokinetics in cattle that have been performed at USDA and Emilio Esteban shared with the group the status of the PFAS-contaminated herd from New Mexico. Thirty cattle were moved to a clean site and biological samples have been taken as a function of time to evaluate PFAS kinetics. Animals also have been sacrificed periodically to evaluate tissue levels. This study is nearing completion with four dairy cows remaining in the study.

David Smith described some rapid detection methods being developed by USDA. These methods may be of high interest to EPA.

David Smith was asked to discus Ex. 5 Deliberative Process (DP)
summarized as follows:

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Ron Hines led some discussion around the points that agricultural species are not routinely used as test species for EPA research. However, EPA has the expertise and tools to address some of the above needs using computational approaches coupled perhaps with targeted collaborative studies to validate models. The ongoing high throughput studies on 150 PFAS were briefly discussed, including the toxicokinetic endpoints being evaluated. David Smith indicated a strong interest in seeing the list of 150 PFAS to determine overlap with USDA's high priority list and Ron agreed to share that list with him.

Carlie LaLone described the web-based SeqAPASS tool her team has developed. Given an identified target protein in one species, *e.g.*, fatty acid binding protein (FABP) or the peroxisome proliferator-activated receptors (PPAR), SeqAPASS can be used to evaluate whether critical amino acids within those target proteins have been conserved in other species of interest. If so, one can presume that the mechanism of toxicity may well be similar in the two species, or if not, there likely would be a divergence in the mechanism. Carlie then shared some preliminary assessments that suggested the viability of this approach.

Paul Schlosser commented that using SeqAPASS data, the PFAS PBPK models that have been developed for rat or other species might be extrapolated to the species of interest to USDA. This would begin to address several of the USDA needs.

Gary Ankley and Dale Hoff also described some of the analytical methods currently being brought on-line in Duluth that might be taken advantage of to work collaboratively to assess PFASS bioaccumulation in fodder, such as alfalfa and corn.

There was consensus that this initial meeting was valuable and would be followed-up with another meeting to move some of these ideas forward. Ron Hines will take responsibility for scheduling that follow-up meeting.